17. Find an initial basic feasible solution of the following problem using north west corner rule:

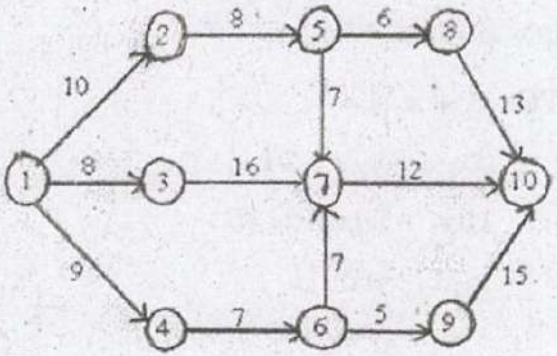
	D_1	D_2	D_3	D_4	Supply
O_1	5	3	6	2	19
O_2	4	7	9	1	37
O_3	3	4	7	5	34

18. Find an optimal sequence for the following sequencing problem of four jobs and five machines when passing is not allowed, of which processing time (in hours) is given below:

Job	Machine				
	A	B	C	D	E
1	7	5	2	3	9
2	6	6	4	5	10
3	5	4	5	6	8
4	8	3	3	2	6

Also find the total elapsed time.

19. Determine the early start and late start in respect of all node points and identify critical path for the following network.



12. (a) Find the initial basic feasible solution of the following transportation problem:

	I	II	III	Demand
A	1	2	6	7
B	0	4	2	12
C	3	1	5	11
Supply	10	10	10	

Using Least cost method.

Or

(b) Determine basic feasible solution to the following transportation problem using North west Corner rule.

		Sinks					Supply
		A	B	C	D	E	
Origins	P	2	11	10	3	7	4
	Q	1	4	7	2	1	8
	R	3	9	4	8	12	9
Demand		3	3	4	5	6	

Shanmuga Industries Arts & Science College T.V.Malai

9. Specify the function of minimum spanning tree algorithm.

10. Define connected network.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) A Manufacture produces two types of models M1 and M2 each model of the type Ml requires 4 hrs of grinding and 2 hours of polishing, where as each model of the type M2 requires 2 hours of grinding and 5 hours of polishing. The manufactures have 2 grinders and 3 polishers. Each grinder works 40 hours a week and each polishers works for 60 hours a week. Profit on M1 model is Rs. 3.00 and on Model M2 is Rs. 4.00. Whatever produced in week is sold in the market. How should the manufacturer allocate is production capacity to the two types models, so that he may make max in profit in week?

Or

(b) Rewrite in standard form the following linear programming problem

Min $Z = 12x_1 + 5x_2$

STC $5x_1 + 3x_2 >= 15$

$7x_1 + 2x_2 <= 14$

$x_1 >= 0$

Shanmuga Industries Arts & Science College ★ T.V.Malai

20. The network in Figure. gives the distances in miles between pairs of cities 1,2, and 8. Use Dijkstra's algorithm to find the shortest route between the following cities:

(a) Cities 1 and 8

(b) Cities 1 and 6